Crypto-Current

Bitcoin and Philosophy, Part-0

Zero Philosophy
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[The first 100,000 words or so of this horrible monster were posted at the *Urban Future* blog, where they died with it. I'm going to laboriously put them back up here as preparation for the rest. All notes should, of course, be footnotes.]

The faint pulses of electric current that flow through a nervous system and the pulses of currency that flow through an economy share a common etymology and a common destiny that continues to unfold. – George B. Dyson[1]

There is a sort of vast cycle of flows of production and chains of inscription, and a lesser cycle, between the stocks of filiation that connect or encaste the flows, and the blocks of alliance that cause the chains to flow. – Gilles Deleuze and Félix Guattari[2]

Everybody needs money. That's why they call it 'money'.[3]

"What is truth?" – Pontius Pilate (John 18:38)[4]

I have a lot of friends who are programmers. The programmers have always gone like, "Those [Bitcoin] guys are crazy." [...] And then, almost 100 percent of the time, they sit down, read the paper, read the code – it takes them a couple weeks – and they come out the other side. And they're like: "Oh my god, this is it. This is the big breakthrough. This is the thing we've been waiting for. He solved all the problems. Whoever he is should get the Nobel prize – he's a genius. This is the thing! This is the distributed trust network that the Internet always needed and never had." – Marc Andreessen[5]

It would be very surprising if [the Bitcoin solution to the Byzantine Generals' Problem] *didn't have substantial application. ... That something very significant has happened – I think the prospects for that are quite good.*

– Larry Summers[6]

Bitcoin is hard to grasp because it's almost like a technology from an alien civilization.

– Ian Bogost[7]

In this paper, we propose a solution to the double-spending problem using a peer-to-peer distributed timestamp server to generate computational proof of the chronological order of transactions.

– Satoshi Nakamoto[8]

Nullius in verba

– Motto of the Royal Society[9]

Foreword

§0.00 — *Crypto-current* exists if secrecy has a trend. Such a suggestion is naturally obscure. It coaxes attention toward the surreptitious direction of things. 'Crypto' is simultaneously the topic, and the retraction of the topic. This evasiveness is compounded by the complexity of its complement. The current eludes docile conformity with the order of objects. This is – apparently – quite independent of any strategic commitment to concealment. It is a flow of time, electricity, [10] and cash – a turbulent conceptual confluence. Current events are the only kind. If we are unable to step into the same current twice, it is because of what irreversibility has secured in the past. A double blockage then – produced, in a stream, as *concealment* and as *sedimentation*. Subsequently, everything we have to say here is already over (but unseen).

§0.01 — *Is it really necessary to be so cryptic?* This question will do, as a trigger. It seems – however querulously – to ask everything our title seeks to, and more than a book is able to comprehensively engage. The implicit reciprocal: *Is it not possible to be clear?* What begins with a minor irruption of cognitive irritation, agitated by a few specific words, opens into a history of secrecy invested with hazily-discernible momentum, and beyond, into the dark Herakleitean gnosis – matrix and *crypt* of Occidental philosophy – *Φύσις κρύπτεσθαι φιλεῖ* ("Nature loves to hide")[11]. The provocation of *integral obscurity* leads to the 10,000 things.

§0.011 — Glimpsed at its distant pole of unbounded abstraction, *the cryptic* is the ultimate philosophical enticement. At this point of origination, two-and-a-half millennia behind us, philosophy was nothing other than abstract cryptography. Its concern was *hiding*. If cryptography is currently subsuming philosophy back into itself, the historical figure thus sketched is a great cycle – an obscure return. Restoration – closing an epoch (of financial discretion, most superficially) – is also an irreversible liquidation, into currency. Registered within the terms of the transcendental or critical philosophy, it is a departure from the pseudo-object of 'the present' in the direction of *current time*.

§0.0111 — Streams run downwards.[12] Engagement with Bitcoin brings us into communication with hidden *inclinations*, whose indicators mark *productions of directionality* – gradients, or temporalizations.[13] Between real succession and such abstract inclines there is no difference. *Entropy* describes such an 'arrow' most basically, but upon this are built a succession of stream-tapping technologies (hydraulic, thermodynamic, informatic), reinforced by directional

mechanisms, beginning with clockwork ratchets, and then proceeding – from the early industrial-era – through check-valves, into electronic forward-bias diodes (rectifiers), and software-implementations of one-way or 'trap-door' functions that support asymmetric crypto-processes, and irrevocable contractual commitments. Current emerges from the machinery of time, which is to say from *operational asymmetries*. 'Flows' are easily – and often lazily – invoked, without even notional attention to their engineering details. Far too much is already understood about the mechanics of irreversibility to leave such vague suggestions as a stopping point.

§0.02 — Economies are assembled from flows. Unsurprisingly, therefore, their native codes are *currencies*, or current-signs. As societies mobilize matter-energy resource streams, their monetary conventions register these flows by inversion, and strict reciprocity. *Hole-flow* in electronics is a close analog. Every non-barter commodity exchange, or non-financial transaction, catalyzes a flow, by pricing it. The 'real economy' is thus automatically captured, by a monetary code, even when – as is overwhelmingly typical – this quantification through signs is never aggregated. Since money systems install an intrinsic economic intelligence (preceding all reflective theorization), economics – uniquely among the sciences – inherits a field of objectivity whose arithmetization has already taken place. This same delicate shadow, cast into business ledgers (pre-denominated by currencies), at once facilitates and registers a system of flows, in a twin production of economic objects. Business is recorded in the way it is produced. Dynamization of the commodity – or economic circulation – is not reducible to, but nevertheless strictly corresponds to, transference of signs.

§0.021 — The economic event, then, is co-original with its semiotic double. It is enabled by signs, before being represented by them. Even the secondary processing, through aggregation, of such information has a pre-theoretical foundation. Powerful economic agencies – most significantly the state's tax authorities – concentrate commercial data, long before scientific political economy begins to re-compile it, as an analytical object. *Logos* arrives late.

§0.03 — It approaches a truism – although not one for this reason to be glibly dismissed – that philosophy assumes, as if by right, a position of sovereign authority relative to everything it touches upon.[14] A discussion of *Bitcoin and Philosophy* amounting only to a confirmation of this stance would merit contempt, even if it were packaged as humor. Since any attempt to philosophize *about* Bitcoin would already be a joke, it is better to *get it*. Bitcoin seizes philosophical attention *because it is already doing philosophy* – or what philosophy is still (on ever rarer occasions) expected to do – and at multiple levels. It tells the truth. Bitcoin is not only a recognizable philosophical statement, but also, and more importantly, a philosophical automatism, a synthetic philosophical machine.[15] It not only philosophizes in the manner of a man – although this is its certain prospect – but also finally in the way of an angel, or a lesser god. The 'intellectual intuition' (*Intellektuelle Anschauung*) that is for Kant a mortal impossibility,

is for Bitcoin an operational principle. It is destined to close upon itself, and thus know itself. By becoming time, Bitcoin promises an exhibition of *unleashed thought*, in a way no introspective anthropology ever can.[16]

§0.031 — Throughout this book, 'philosophy' is employed freely as an abbreviation for 'modern philosophy', which is in turn consistently conceived – tacitly when not overtly – as *critique* in its (roughly) Kantian sense. To philosophize on any subject over recent centuries, as still today, has been to *criticize*, in the positive acceptation of this term, by differentiating the transcendental *format* from the empirical *datum*, and then resolving – or, stated more realistically, *negotiating* – the boundary conflicts between the two.[17] However it is specifically articulated, critique isolates a properly transcendental productive principle, or function, which is constitutive of a domain rather than existing as an item within one. It thereby marks a *unilateral* or *ontological difference* (which is to say, a discrepancy irreducible to any relation between terms that are internal to the domain considered). Critique is, necessarily, the theoretical assertion of *a non-empirical partition*. Through critical abstraction, the consistent order of the system considered is liberated from its specific instantiation, to become a philosophical preoccupation, immunized against the distractions of any merely factual controversy about its content, but also – simultaneously (or *diagonally*) – from purely formal considerations of its internal logical organization. It is committed to a zone of *positive discovery* (which logic cannot be) that is *systematically enveloping* (as no empirical concern can be). Philosophy, as such, no longer has anything else whatsoever to attend to. If philosophy cannot be critique, it cannot be anything (that matters within Modernity). That is its essential immanent Law.

§0.032 — The target of critique is 'metaphysics' – conceived as a specifiable cognitive error. As determined by Kant, at the origin of the transcendental-critical enterprise, metaphysics is understood as the systematic attempt to apprehend ('transcendental' or ultimate) conditions of objectivity as if they were themselves objects. The repudiation of this effort can be summarized with approximate adequacy in a phrase that serves as a critical war cry: *objectivity is not itself an object*. This is to borrow freely from the critical framing of metaphysical error as it is found, compactly formulated, in the Heideggerian 'fundamental ontological' re-statement of transcendental philosophy. *Being is not a being*.[18] More significantly, for our current purposes, it can be conveniently extended to apply to contemporary techno-social arrangements and communications apparatuses by way of a comparatively simple translation protocol. 'Metaphysics' – over against which disciplined philosophical critique emerges antagonistically – is instantiated by any *identification of a systemic function with some node internal to the system considered*. It can therefore be readily seen that the 'flattening' of a network, through the elimination of system-critical, concentrated, indispensable nodes, which is to say through the *distribution* of its efficient principle, is an exact – if abstract – execution of a critical operation in the Kantian sense. A network *is* a critique.[19]

§0.04 — Already, at the most naïve level of its acceptation, 'Bitcoin' is a word that refers to at least three things. Of these, the most elementary – although today least invoked as a definition of the term – is a succinct, technical paper, in whose catalytic *code* everything was, in a certain sense, already implicit. There is nothing obvious about this terminological development. To speak of the 'critique of pure reason' is first of all to name a book, even though (no less than with Bitcoin) it is the book's 'object' that is being named. Critique of pure reason (the 'thing') is in this case a delayed signification, despite the fact the title says nothing else. In the case of Bitcoin, this system of acceptations is conspicuously inverted. 'Bitcoin' is not understood primarily as a paper,[20] perhaps because it is not primarily an argument. Its nexus of persuasion has migrated outward, in close association with the meaning of *code*. Critique undergoes accelerating automation.

§0.041 — The philosophically pressing motive for hesitation – however momentary – at this point of origin, where the balance between the virtual and the actual is most dramatically precarious, is to hold open the question of primordial *introduction*, even as it tends to eclipse itself. Already, during this remarkably brief embryonic phase, when Bitcoin was implemented only in words, it was at least double – at once a title and a topic. From the beginning, the term pointed beyond the name of a text, towards a virtual entity, something that could be made to happen, or that was, in being rigorously outlined, *already being made to happen*. In being drafted, it was in fact *initiated* – even *released* – and through its 'preliminary' scripting it had already been informally pre-programmed, or *practically* introduced. Bitcoin has existed from the moment it was named (and its origin could be pushed still further back). Such occult potentiation of the semiotic event is what it is to *code*, in the modern sense of this term. It is something much more than description. As code, writing is transported beyond representation to an operational horizon, where *it builds what it says*, immediately. Language that cannot follow it along this path is already a husk – inconsequential by essence – *unless politics can save it*. (Bitcoin is the bet that it cannot.)

§0.042 — Even when not explicitly referencing a text, and thus evoking the gap between word and thing, the name 'Bitcoin' remains divided by a fatal difference (one of still greater importance to our discussion). The initial, narrow, version of this rift – distinguishing any quantity of *bitcoins* from the comprehensive singularity of *Bitcoin* – is a critical faultline to which we will repeatedly return.[21] It anticipates – while remaining irreducible to – a schism, of gathering social concreteness and historical consequence, opened by the polarization of 'Bitcoin' (conceived as specific, contingent, branded, and politically- or competitively-extinguishable) over against 'the blockchain' (a generic technological innovation, that is accepted as irreversible, and promoted as conservatively-assimilable). Threading through the most energized Bitcoin debates is a question of *limitation*. Can the currency system be circumscribed (and then *transcended*), as the larval stage of something greater than itself – serving as the historical 'bootloader' for a new

Internet revolution driven by generic blockchain-based trustless transactions protocols? The philosophical rift re-activating transcendental-empirical difference in the domain of monetary technology has thus already been dramatically opened and even tentatively evaluated in the course of a process of widely-reported, financially-invested, socio-economic exploration, before any self-conscious philosophical activity reaches it. During the elaboration of this controversy, some of the crucial interests at stake in Bitcoin's inner rift have been exposed, and their theoretical absorption facilitated. The fact that the question has been raised by opportunistic venture capital does nothing at all to detract from its *perfectly* philosophical character, as captured – with reasonable fidelity – by the formulation: *What are the limits of Bitcoin?*

§0.043 — It is at the third – and fully historical – level of meaning, however, that the ultimate scope of Bitcoin's significance is gradually manifested. Beyond the initial *formulation* (or abstract *protocol*), and its subsequent *implementation* as a functioning currency system (and already something more), there emerges a far broader Bitcoin *installation* process,[22] of evidently vast but still-obscure character and magnitude. The formula is a diagram, the implementation is an active database supporting a crypto-currency, but what undergoes installation is an entire techonomic 'ecology' or 'infrastructure' – a complex manifold of interlocking parts, whose horizons are still lost to us in hazy distances (however rapidly we are hurtling into them). It is on this dimension that *Bitcoin and Philosophy* is most clearly and comprehensively overwhelmed. After being thought, and then done, Bitcoin promises – or threatens – to change the way everything is thought and done, or would be thought to do so, were it not that in the age of *code* such dulled terms have outlived their usefulness, and persist only through inertia.

§0.05 — Bitcoin *machines value*. It follows that the prevailing conception of technology as instrumental capability, subsumed under extrinsic ends, is among the very many things to fall by the wayside as the process escalates. Traditional categories of thought (or conception) and action (or performance) are mutually subsumed into an irreducible cognitive action. The strengthening diagonal current passing between the notional and the actual, 'ought' and 'is', intelligence and mechanism – which in its aporetic articulation has been the exquisite torture of postmodern philosophy – is simply code. Bitcoin ushers this cryptic fatality into simultaneous conceptual *and* mechanical consummation.

§0.051 — It is necessary to go further. In the final analysis, nothing less than the nature of reality is brought into question by this event. It concerns the 'Being of beings' (at least). If the claim seems extravagant, it is nevertheless inescapable, once the transcendental status of an *ultimate criterion* based upon *absolute succession* is granted to the Bitcoin protocol. It is not only that no higher tribunal exists. When envisaged at a sufficient level of abstraction, no higher tribunal *could possibly exist*. The Bitcoin ledger is the first intrinsically reliable record. It is now known what happened, without argument. This is a situation without precedent which also reaches –

immediately – an absolute limit, in principle. It thus exemplifies the *synthetic a priori*. There is no philosophical thinking *of* Bitcoin – in either the subjective or objective genitive – that is not also ('simultaneously') a re-thinking of time, or sovereign decision. 'Re-thinking' is a revision, but no less a restoration. Bitcoin introduces us to a time-machine, or *time-synthesizer*, which can only complicate any initial intuitions about its novelty. It has been on the way for centuries (at least). This will, in any case, constitute the stubborn, guiding assertion of the book.

§0.06 — *Crypto-Current* is organized into six sections, which together compose a cycle. The analytically dismantled circuit of Bitcoin – with each segment seized as a philosophical provocation – finally closes upon itself in an attestation of its positive groundlessness. The loop of Bitcoin auto-production knows nothing of transcendence, at any stage. Whatever might have sought to intrude, representing an extrinsic authority, is dismissed as a superfluous 'trusted third party'. The circuit is the entire *thing*.

§0.061 — On the path to a philosophical hash of Bitcoin as a transcendental horizon, *Crypto-Current* commits itself to a number of interlocking but isolable propositions. Among these, the most intensely exploited – which is to say, those found indispensable for our purposes – are advanced here, in the approximate order of their introduction. Compressed in this way, they can only appear ill-grounded, or dogmatic. They are anticipated in this way for the purposes of convenient preparation, not persuasion. (Digits in the first decimal place correspond to the chapters of this book where the principal discussion is found.)

§0.1 — Chapter One provides an introduction. It takes a short Satoshi Nakamoto text as its point of departure, in order to capture Bitcoin as *larva*.[23] Its intimate relation with the history of cryptography is supplemented by something hidden, working out through it. Word becomes code.

§0.11 — At the beginning there is a yet-underestimated *philosophical work*. Whatever happens to Bitcoin, its status as a decisively important *document* will be secure. Furthermore, reflexively, what is meant by a 'document' will never again be the same, after logical envelopment by the category of the *ledger entry*. Documentation has crossed a new threshold of mechanization. *Bitcoin the documentary* is thus an exposé in which nothing is hidden, unless behind a fully-manifested mask. It binds publicity to security. All Bitcoin does is secure documentation, which is enough.

§0.12 — The entire cycle is captured by this preliminary diagram, as an "electronic cash system". In the closure of this cycle, a rupture – or irreversible occurrence – has taken place, comparable in structure and scale to Gödelian transcendental arithmetic, and to Public Key Encryption. Money changes phase, with an abrupt radicality from which there can be no return.

§0.2 — Chapter Two explores the reciprocal application of transcendental philosophy and the Bitcoin protocol to each other. It is proposed that the critical triple skein of ontological difference, subtraction of transcendence, and temporalization can be pursued, without significant interruption, into the analysis of Bitcoin. It takes Satoshi Nakamoto's (2008) Bitcoin paper as its basic text, since this is what the word *Bitcoin* – by informally-standardized cultural convention – names.

§0.21 — Bitcoin is first broached as a philosophical topic, and thus, subsequently, as a mode of philosophical access to other things. Philosophy is required to concede much, in following this track, especially in regard to the traditionally-conceived cultural and institutional bases of its own authority. The order of discussion follows the course of the problem – the *double-spending problem* (DSP) as it is nominated – which is understood critically, not only as a practical obstacle to functional cryptographic currency, but also as a philosophical topic of radical generality. *Duplicity* in its deepest and broadest sense is the target.[24] The DSP cannot be resolved, then, without simultaneously bringing *singularity* into the fold of formal engineering. The concrete execution of the Bitcoin protocol provides a peculiarly vivid demonstration of the socio-technical (*machinic*, or *techonomic*) production of abstract singularities. Anything else would be cheating.

§0.211 — Critique – the critique of metaphysics – *is* philosophy (as a current undertaking). It is what philosophy has irreversibly become. Insofar as these terms still diverge, however minutely, there is a task that remains uncompleted. Philosophy establishes itself in modernity by way of auto-critique. 'Like' Capital it is a path with firm direction, but without destination (the path *is* the destination). It exists only by perpetually overcoming itself. Critical – or diagonal – method is a tool through which philosophy is definitively exhausted. Its sole product is immanence. The rigorously complementary formulation asserts: *Residual transcendence is the negative of the philosophical undertaking*. The systematization of the synthetic *a priori* is the model of diagonalization in philosophy. Bitcoin is therefore in the very strictest sense *a critical enterprise*, targeting "trusted third parties" as superfluous metaphysical structures. *Immanence* is its techonomic – or socio-historical – rather than its merely reflective-conceptual output (or production).

§0.2111 — Critical method coincides exactly with diagonal argument. It identifies pseudo-tautologies and proceeds through their complementary pseudo-paradoxes. The synthetic *a priori* is the model. Circuits are diagonals.[25] They do not resolve in one way or another, but always *between*, either in a hunt for equilibrium, or a flight through inter-excitation.

§0.22 — Analytic-synthetic difference registers cryptographic asymmetry within philosophy. It marks the irreversible. In keeping with the mainstream critical tradition, the formulation of

methodical procedure is subsumed into the problem of time. *The philosophical problem of time*, it might be said, if this were not an invitation to misunderstanding. Restoration of transcendental temporality, or absolute succession, is a philosophical achievement only insofar as the process of philosophy has been thoroughly dis-anthropomorphized, technicized, economized, and (thus) spontaneously *materialized*. The realization of the idea is only accomplished in the machine. Auto-materialization is so essential to the critical process that it amounts to an intrinsic destiny. Critique cannot consolidate itself other than as historical modernity. It would be a redundancy, or merely emphatic, to add: *in reality*. Mechanization is nothing but *mechanization in reality*, and in fact compresses further, to sheer *realization*, or production.

§0.221 — Natural philosophy – which achieves intellectual autonomy as physics – lies directly in the path of the question of time. In particular, it has radically re-framed transcendental aesthetic within cosmological spacetime, where absolute temporality finds no place. Bitcoin can only interrupt this apparent tendency to theoretical detemporalization, since there can be no resolution of the DSP without strictly determinable succession. Bitcoin and *time restoration* are finally indistinguishable.

§0.23 — Network thinking – as instantiated by the Bitcoin protocol – complies with the pre-eminent contemporary operationalization of transcendental philosophy (which is considered here, with a maximum of strategic vehemence, to be exactly synonymous with *critique*). A reliable expectation follows, that Internet production is accompanied by format / data differentiation (into 'layers'), eradication of transcendence (absence of 'critical' nodes), and temporalization (primordial production of absolute succession, or post-relativistic order). The *network* – radically conceived – is a quasi-teleological manifestation, tending towards the actualization of a principle that is itself emergent, and which functions as a criterion of intelligibility.[26] In consequence, any network can be evaluated with reference to an abstract model of self-reproducing decentralization. Bitcoin exemplifies – which is to say *realizes* – this process with exceptional starkness.

§0.3 — Chapter Three engages semiotics – or signs about signs. It concentrates upon the status of Bitcoin as a solution to the double spending problem (or 'DSP'). A case is made for the extreme generality of the DSP as a practical semiotic quandary, roughly coextensive with the existence of life. Resolution of the DSP through a crypto-secure proof-of-work protocol is thus an episode in terrestrial bio-history, and not merely a drastic anthropological – or mature industrial capitalist – innovation (even if it is also both of these). What the protocol addresses is no less than *virus*, in its broadest extension. It corrects the intrinsic economic crisis of the sign. Semiotic values are instructions, and necessarily *coinages*. They make a difference, of 'economic' consequence. Duplicity – 'hijacking' – is thus automatically incentivized. To capture instructions is to command resources. This strategic option is no younger than the organism.[27]

§0.31 — Potential *duplicity* is a foundational semiotic concept, with extension far beyond the anthropomophic sphere. Virus already effectuates it (without any recourse to metaphor). The sensitivity of any system to code is, primordially, a vulnerability to capture. The programmable is the reprogrammable. Zoosemiotics is enveloped by this dilemma. No organism that takes advantage of clues, or cues, escapes their strategic ambiguity. Reading risks misreading *essentially*, and long before language. The hazard of trickery, by mimics, or deceivers, was not an invention of man, still less of digital information systems.

§0.32 — Spam, nevertheless, dramatizes the inherent tendency of the duplicitous sign with peculiar sharpness. It is no coincidence that the genesis of Bitcoin is deeply-interconnected with the practical problem of spam filtration. Spam experimentally demonstrates *anti-money*. In this, it has been a great teacher. Any functional system of message value credentials, negatively determined against spam, is already an embryonic digital currency.

§0.33 — Robust credential production makes money, whose ultimate basis is counter-duplicity. Bitcoin variants, or 'alt-coins', belong firmly to the same field of problems. Alt-coins are, at least partially, duplications – quasi-copies, or rough clones. The superiority of Bitcoin, in respect to competitive 'alt-coins' can rest only in its originality, or 'first-mover' advantage, since nothing precludes the emergence of a perfect copy. The eventuation of network effects – i.e. raw or irreducible singularity – does everything. *Coinage* has no essence beyond its event. From an exact date, *something happens*. There is no doubt more that can be said, but it cannot stretch to full-specification of the phenomenon, even in principle. Bitcoin is, both rigorously and redundantly (or in multiple senses), a production of singularity. *Non-duplicity* captures this in its most generically-intelligible dimension. A DSP-solution defines a semiotic, irreducible to the signifier or the index (sense or reference), and already tacit in the nature of the monetary sign.

§0.34 — Explication of the 'double spending problem' (or 'DSP') necessarily produces, or reproduces, an economic theory of the sign. It restores exclusivity, or – in the language of the economists – the *rivalrous* sense of the semiotic entity, as commercial token. Resolution of double spending *can only be* a compression to singularity, as grammatical function and implicit concept, but more basically as practical resource. The conservation of value establishes its real and intrinsic – i.e. *autonomous* – ground. In this way (alone) it establishes its conditions of existence, in a circuit, by resourcing itself.

§0.35 — The generality of the DSP is evident in many other dimensions. The double opens the door to proliferation without limit. In this respect, *double-spending* invokes the double of the doubling period, rather than that of double-checking, or double-entry book-keeping, both of which figure on the other side of the account. According to the defining procedure of double-entry book-keeping, whenever money is added, on one side of a ledger, it is subtracted on the

other. This requirement implements a distinctive semiotic procedure, irreducible to either signification or designation, which can be named *allocation*. It is only with regard to its allocative function that a sign can be *spent*, which is also to say, function as a *rivalrous good* in the economic sense. To transmit a sign, while still keeping it, in the fashion of language, is the essence of the DSP. A DSP solution, such as Bitcoin, is therefore – by necessity – an assault upon the linguistic model of the sign. Money is not a language. Insofar as it rises to prominence within semiotic theory, it necessarily dethrones the linguistic ideal. Within the anthropomorphic domain, it is precisely in becoming non-linguistic, and non-representational, that signs start to *work*. Signs are *operators*, which makes them worth stealing. They are keys, or passes. Virus grasped this more than three billion years ago.

§0.4 — Chapter Four approaches Bitcoin as a contribution to – and problem for – the theory of games. Such a contextualization is ineluctable. The Byzantine Generals' problem, which prompts the Bitcoin solution, is a model game-theoretic quandary, situated within the project of formalizing *distributed coordination*, which has accompanied Modernity from its inception.

§0.41 — The Bitcoin protocol is designed as a game. Incentives are built into its infrastructure. It only works when it is played. The distinctive feature of the Bitcoin game is that it produces binding decisions without a referee, or dependence upon prior agreement. Coordination is neither presumed, nor invoked, but produced. The absence of all superior authority makes Bitcoin *transcendental* in the philosophical sense, and adapts it to *anarchy* in the rigorous sense this term carries in the field of international relations theory. Any player is welcome to cheat. No moves that are possible are forbidden. *Do your worst* is its open invitation. This is what *trustlessness* means.

§0.42 — Social analysis is a regional application of game-theory. There is no conception of 'the social' extricable from the domain of games. Transcendental philosophy can be hashed into a game-theoretically tractable vocabulary, which facilitates its general social application. The meaning of 'spontaneous order' is finally indissociable from, and co-elaborating with, that of 'games'. In both cases, what is posed is the *strategic problem of multiplicity*, or primordial non-coordination. War, politics, and formalized commerce stack successively upon it.

§0.421 — *Consensus*, as technically formalized within Bitcoin, is game-theoretic *coordination*, or the solution to a collective action problem. It thus unlocks the most basic problems of social science. Money games, especially, require hard commitments. The DSP is conceived in these (game-theoretic) terms as *revisability*. It is the negative of a hard, or irrevocable, commitment. Unambiguous irrevocability, then, sets the Bitcoin engineering problem. *Lock-in* is its specialism.

§0.422 — More particularly, the whole of *Bitcoin politics* belongs here, including both the conflicts *over* and *within* the crypto-currency. From the side of Bitcoin, the initial and framing

challenge of the game is to get itself played. This unfolds 'in the rough' where (to mix metaphors) 'turning over the table' remains an option, at least in appearance.

§0.4221 — There is necessarily a question, defining of *the left* in this domain, whether Bitcoin should be *allowed* at all. The ideologically basic issue is permission. At this level, the game is existential for Bitcoin, and everything it carries, meaning the occult liberal tradition.[28] Mere survival counts as a win. If permissionless process can establish itself, a great veto is irreversibly nullified. The political sphere is downsized.

§0.4222 — If this trend were not resisted, liberalism would have no enemies. *Prevention* of Bitcoin, however, looks to be already a lost cause. What Bitcoin essentially *is* cannot easily be distinguished from this anticipated outcome (which is to say, from its bare survival). Existential security was baked into the protocol originally.

§0.4223 — If rejection proves impractical, might there be moderation? 'Within' Bitcoin itself, there is almost everything to play for. Crypto-destiny appears to bifurcate, even before it forks. The relevant spectrum of variation separates *Mainstreamers* from *Ultras*. The dominant topic here is assimilation or, reciprocally, regime change. Is Bitcoin a tool, or a weapon? This question is folded into Bitcoin's *Block-Size War*, which is as important as any conflict of our age.

§0.5 — Chapter Five is concerned with the function of Bitcoin as money. Theoretical articulation of this problem requires a transcendental deduction of money, as the condition of possibility for commercial calculation. Within this deduction, the six traditional 'qualities' of money – durability, scarcity, divisibility, communicability, fungibility, and verifiability – occupy the place of structurally-inevitable *forms*, or *categories*. In other words, and with some qualification, they are predictable (*a priori*) aspects of money, rather than its mere empirical features. They are mathematically conditioned, and only *occasioned* by historical causality. Once grasped conceptually, they are confidently expected. Nothing could be money otherwise (with only notably bizarre exceptions). It follows (in accordance with *a priori* synthesis) that a robust cryptocurrency will take the form of artificial gold.

§0.51 — Money has six categories. The three indispensable monetary functions – as a *store of value*, *means of exchange*, and *unit of account* – are presumed to be structurally indispensable to this analysis. They are diagonally complicated by *stock* and *flow* (the pseudo-synonyms of value storage and exchange), to generate an architectural principle.

§0.511 — The concept of money is not rigorously delimitable. For essential reasons, it has never been captured by a definite idea. *We still do not know what money can do*.

§0.52 — The story of money – which coincides closely with history as such – can be told in many different ways. There are primarily anthropological, economic, technological, and political versions, among others. *Crypto-Current* tells a number of these, very briefly.

§0.53 — Abstraction emerges within the historical process, as an immanent product. The monetization of human societies during the Axial Age (~2,500 BC) inaugurates it, triggering the innovation of philosophical and mathematical thought. Money thus conditions the birth of philosophy before becoming a philosophical object, and mathematizes before becoming a regional application for mathematics.

§0.531 — Money thinks. In fact, it *out-thinks* us, insofar as reflection is brought to it late, after its own cognitive operation has been long at work, and ultimately perhaps also in other ways, yet to be apprehended (from our side). It has already made sense of things, before we have begun to make sense of it. We have no grounds upon which to affirm, with confidence, that money and general intelligence can be finally distinguished. The institutional separation between artificial intelligence research and crypto-currency innovation is not rooted in philosophical principle.[29] The expectation that catallaxy, distributed commercial learning, or price discovery encounters a limit short of *the question of the price of being* finds its sole resilient foundation in moral indignation. Since Bitcoin demonstrably *does ontology*, and even 'fundamental ontology', the status of normative revulsion in this domain is irredeemably dubious.

§0.532 — Having yet to think money, beyond a preliminary stage, we are poorly positioned to set hard boundaries around what money itself can think. Meditations upon the ultimate conceptual relation between money and social identity are inhibited – or interrupted – by an indignant retraction of self from configurations of crystallized value. Yet money, already pre-empts this recoil, and with greater effectiveness, through its insinuation of liquidity, and consequent socio-cultural intensifications of liquidization, liquification, and liquidation. All that is solid melts into a liquid, wherever money touches it. Money dissolves stuff. *Currency* says this, realistically. To be insulted by monetary denomination of sacralized values, then, is to assume far too much. There is a definite metaphysics at work here, which is to say an image or objectification of money that cannot survive critical scrutiny, or – more importantly – critical social *process*.

§0.533 — Our dominant models are undergoing rapid obsolescence. For instance, money does not reduce to the concept of credit, even though this reduction has made itself – at least momentarily – inevitable. As the most recent and most complex episode in the history of money, financialization dominates its contemporary conceptualization, and this development was, until very recently, expected to further escalate in the same direction, determined increasingly by invisibility, credit facilitation, and institutional trust. Money appeared to be converging with the function of a bank account.[30] This apparent teleology – guided to *invisibility* – was

extraordinarily vivid. Crypto-currency ironizes and derails it. This is why the history of money has now to be retold.

§0.6 — Chapter Six closes the Bitcoin cycle, by attending to the absorption of socio-economic identity into cryptography, the matrix of philosophy. The Bitcoin wallet is a mask. Asymmetric cryptography formalizes irreversibility at an unprecedented level of techonomic intensity. It initiates the age of the *open secret* (or of masks). Bitcoin is its currency.

§0.61 — Cryptography envelops philosophy, in reality. The practical processing of secrecy defines a transcendental horizon. Epistemology is broken by its own naivety when it assumes an object without intrinsic impulse to escape. To know is to capture, grasp, or seize. It is thus, at least roughly, to fight.[31] Bitcoin, whose lineage is cryptographic, inherits better instincts – by far – in respect to knowledge, and truth than those typifying professional philosophy. It expects *trouble*, and not only difficulty. Its technical specifications are strategic, at the root. Rather than seeking shelter, Bitcoin makes cryptographic attack an intrinsic part of its security infrastructure. Its miners are poachers made game-keepers.

§0.62 — The twin-key cryptography which Bitcoin builds upon is a philosophical innovation of extraordinary – and still enormously under-estimated – importance. Recursively, it is itself a key, to the secrets of the dyad. The crudity of dialectical and structural articulations is comical in comparison. The cryptographic lineage directs application of this machinery, initially, to the public / private distinction, which it practically and conceptually *solves*.

§0.63 — Bitcoin significantly accommodates agent-identities to the rising Age of Masks, in which digital *avatars* implement the 'empirical ego' of transcendental philosophy. Identity, address, and account ('wallet') are brought into exact coincidence. All are a single *fully-publicized disguise*.

§0.64 — The concept of property remained weakly defined prior to the age of advanced cryptography, and the rigorous abstract determination of *keys*.[32] It is upon lockings and unlockings that the entire reality of property is built. When critically collapsed onto the plane of cryptographic immanence, privacy and property are indistinguishable. Both are accounted in keys. No other valuables in reality exist.

§0.65 — Asymmetry, as operationalized within public key crypto-systems, is *an implementation of time* – a *temporalization*, or current. Things go one way rather than another. It is cryptography, then, finally, that unlocks the historical meaning of philosophy, by retrieving the keys of time. Bitcoin realizes absolute succession as accomplished artifice. The cycle is closed.

§0.71 — Three appendices are gathered in the penultimate section of the book. The first is devoted to a slightly larger reading of the Satoshi Nakamoto Bitcoin paper than that undertaken in Chapter-3. The second, folded into two sub-divisions, engages diagonal method (the principal procedure of modern philosophy), and its application to the *techonomic integrity* of the modern industrial process. The third discusses the geopolitics of Bitcoin in reference to concrete contemporary issues of currency hegemony, the status of the US Dollar, and the economic rise of China.

§0.72 — The apparatus includes a Bitcoin Time-Line, very short briefings on Coins, Organizations, and People, a Glossary, and References. This information is suggestive, more than exhaustive. The scale of the crypto-currency phenomenon already exceeds any realistic prospect of comprehensive purchase, or fine-grained general introduction.

§0.8 — *Finally* (but also before), there's another thing. It might even be regarded as the main thread. Historically, it will have been. We can be exorbitantly confident about that, with such anticipation being the entire *point*. There is *something* more than a progressive causal series at stake in the arrival of Bitcoin. Preliminarily – and from historical necessity – this concern proceeds under the sign of *teleology*. It has to be noted clearly from the beginning, however, that an unambiguous defense of teleology would be no less unbalanced than its simple negation, amounting to mere regression. Between final and efficient causation it does not suffice – either in the end, or effectively – to choose. The philosophical obligation is always diagonal. In this case, Bitcoin entrusts us with the teleo-mechanical line, which inherits and protracts the fundamental modernistic pseudo-paradox of *mechanistic liberalization*. There is no real freedom outside the innovation of machines. Yet to recover teleology is simultaneously to attack it. As with anything worth defending at all, when teleology is critiqued, it gets stronger. It needs to be gnawed at more aggressively, which means – first of all – pulling it back off the shelf (or out of the fridge). Teleology is re-animated *as a question* when the end is intuited at work. Which is to say, in the working-out of the process the pretended sovereignty of the beginning is dethroned. We cannot but ask: *What is Bitcoin becoming?* This question is itself a piece of fate.

§0.81 — It cannot be sufficiently stressed that teleological thinking *typically goes wrong*. If it had not been prematurely dismissed, its structural failures would have been better understood. Modernity has not harried it enough. The principal teleological error is *hubris* (which is known to philosophy, in its general theoretical manifestation, as 'metaphysics'). In this case, it manifests as the pretense to adequate apprehension of the *telos*, whatever its variant, *as if it were an object*.[33] This error is profound, and might easily seem to provide ample justification for the programmatic extinction of teleological thinking without remainder. Yet such a response – which has in fact predominated within modernity – is hyperbolic. It leads predictably, which is to say inevitably, or in fact by ultimate irony *finalistically*, to a cognitive vulgarization (and

typically a geometricization) of time, in which the defining asymmetry of the temporal axis is extinguished. Transcendental temporality cannot be reduced to the correlate of a purely mechanical process – for instance, to a *dimension* – without obliterating its time-signature entirely. Radical space-time distinction is a Kantian inheritance that critique cannot elect to abandon. Once time is freed – again – from geometry, it announces itself through certain definite quasi-teleological or historically-anomalous effects. Minimally, it allows for *something new*. It thus lends itself to teleology in its rigorous employment, which is bound to the disingenuously innocent question: *What is happening?* Such interrogations conform to the eventuation (or emergence) of an entire ontological topic, delivered by the problematic – or non-objective – *thing*.

§0.82 — It might very reasonably be asked: *Why clutter an already over-crowded book with an insistent sub-theme in partial defense of teleological thought?* The primary response: Bitcoin is – *finally* – more intelligible in terms of its destination than its genesis. The more attentively it is examined, the more inescapable the question: *What is it becoming?* What does Bitcoin lead to? This is not a secondary, supplementary, or ancillary puzzle. The 'network effects' locking Bitcoin into history are exactly the same thing, seen differently.[34] Bitcoin makes historical sense, when it can be seen that it was *expected*, or anticipated (if only by a virtual subject, whose actuality is itself outcome-dependent). The attractor exceeds the protocol. It was a piece of destiny from the beginning. *Capital Teleology* is the guide. Reciprocally, *what Capital has been about* is unanswerable without attention to Bitcoin. Nothing denominated in money can be realistically apprehended without recognition that the nature of money is undergoing the single most catastrophic revolution in its history, and is thus ceasing to support expectations that rely upon the simple tracking-forward of precedent. Since Capital-process societies have long been denounced, understandably, for 'attempting to put a price on everything' the scope of this revolution is not readily bounded.

§0.83 —The story of Bitcoin, however enthralling it might be, cannot provide the central preoccupation of a book devoted to the *philosophical meaning* of crypto-currency. While it is a (subordinate) purpose of this work to recommend Bitcoin for dedicated historiographical attention, it does not pretend to execute such research in any serious way. Initially, the problem is quite straightforwardly practical. The extraordinary dynamism of Bitcoin makes it a moving target. It generates more history than can be humanly absorbed in real time. In other words, *it escapes*. Yet, while at one level this comparative paucity of historical resolution follows from an economic decision (about the *distribution of time*), it also doubtless reflects an essential philosophical prejudice, prioritizing abstraction. Despite firm conclusions regarding ultimate path-dependency, *Crypto-Current* cannot be primarily historical, because it is drawn into the *idea* of Bitcoin, in something far closer to the Platonic sense of this term than its epistemological, or even merely psychological, successor. Its topic envelops temporality, and engages the *production* – rather than the unfolding – of time. In this respect, it adheres to the mainstream of the critical

tradition, for which primordial temporalization is the key. Crypto-current is chronogenic process. It is that – alone – which cannot assume time. History is *grounded* by critique, as in an abyss.

§0.84 — It might be asked, pointedly, in rejoinder: *Is not time, in the end – or in the closure of the circuit – produced historically?* While this question is incisive, and even irresistible, it is – notably – not itself historical, but rather dynamically meta-historical. No historian can ever confirm its force through accumulated evidence, since it would remain unsettled after even the most extravagant factual illustration. Historiography is disturbed by it no less than philosophy. When history descends into it, it is on an approach to its ultimate criterion. Such a question cannot, then, amount to a deflection from the philosophical task of thinking *time as such*. Tightening nonlinearity ensures that even if time itself has thresholds of emergence, marked by dates – such as 'October 31, 2008' – the dating-system provides no stable frame, but is plunged into immanence, and thus absorbed into the vortex of irreducibly cyclical dependency. There is nothing *historical* that can be known about time *in advance*. Bitcoin intensifies this problem – which is that of modern philosophy in general – towards its limit. Artificial time leaves no context unconsumed. It is transcendental, if it is *time* at all. No story of any kind can be adequate to it.

§0.85 — Such reservations do not suggest, even remotely, that the prospects for a history of time can be simply dismissed. Precisely because time is a transcendental horizon, time cannot be found anywhere other than in time. *Nonlinear history*, to employ Manuel DeLanda's term in its most radical sense, comprehends the philosophy of time, through the exact real coincidence of its twin terms. It is only that, when *historiography* reaches this threshold, it has already become something else. The work of Peter Galison is a particularly remarkable case. His magnificent study of Einstein and Poincaré, which grounds the time-relativity problem of early 20th Century mathematical physics in the techno-administrative imperative to synchronization, is an exemplary excavation of chronogenetic circuitry. The point of theoretical climax is marked by an irreducible co-dependency of historical process and time-production, in which each finds its grounds within the other. Neither pole in this circuit submits to its alternative without cascading confusion.

§0.86 — From a certain perspective, that is not altogether reducible to dialectical illusion, the history of Bitcoin is structured by a limited number of dominating controversies, at a variety of levels. The spectrum extends from ideological disputes in the grand style of classical political economy to the detailed practicalities of investment decision-making. Three principal modes of hostile response can be isolated,[35] and sequenced roughly as phases, corresponding to guiding attitudes of *dismissal*, *antagonism*, and *condescension*. Each of these objections can be expected to rise in public prominence in the years ahead, as Bitcoin attracts increasing attention. Since

publicity has some (strong) correlation with positive network effects, even opposition can be perversely supportive. The old saw that 'all publicity is good publicity' is highly-attuned to network dynamics.[36]

§0.861 — *Dismissal*, at its most emphatic, coincides with the prediction that Bitcoin will not – and cannot – succeed. When sincerely maintained, it is no more an argument *against* Bitcoin than atheism is an argument with God. The stakes are low, the occasion for fervor limited. The most facile dismissal of Bitcoin derides it as a scam – perhaps a pyramid scheme. It appears to be based on nothing beside the production of confidence in itself. Such criticism reveals more than it seeks to about money in general, and its attendant superstitions. Ironically, it revives the crudest metallist metaphysics in defense of a threatened post-metallic monetary *status quo*.

§0.8611 — Given the rapid emergence of crypto-currency as an asset class, it would be peculiar if questions had *not* been raised about the adequacy of Bitcoin as money. Among the most vociferously noted of these has been directed toward the extreme volatility of the bitcoin price. Further grounds for dismissal include socio-political and technical scaling problems. The in-built deflationary bias of the currency has also been a source of persistent concern, although this tilts quickly into more radical zones of ideological criticism. Bitcoin is only *actually* deflationary when it works. It cannot, therefore, be the *impracticality* of the currency that is really targeted here, but rather its potential *malignancy*. When deflation is identified as the enemy with which Bitcoin – potentially – collaborates, a new pitch of criticism has been reached. The plausibility of all these arguments is in direct, inverse relation to the development of Bitcoin, as indicated by the rough proxy of its total market capitalization. They rule out a future in which Bitcoin features prominently. It is judged to be mere hype,[37] or a 'craze'.

§0.862 — *Antagonism* takes Bitcoin seriously. It is not a matter of derision, any longer, but of hostility. Additionally, in crossing this threshold, the hostility previously masked as derision 'comes out'. The inadequacy of contemptuous laughter is recognized. More is required *to make Bitcoin stop*. It is at this level that the greatest philosophical hunting grounds are opened. With the elevation of ideological intensity comes the lucidity of overt denunciation – an imperative to *know one's enemy*, and to share what is known. Bitcoin, according to these critics, is *a bad thing*. Criticism now becomes interesting. Perhaps the predominant future of technically-competent left-wing Marxism belongs to this track.

§0.863 — *Condescension* corresponds to a project of assimilation. It is a concession, even a defeat, subject to a strategy of misdirection. If Bitcoin cannot be ignored, or stopped, perhaps it can be adjusted to convenience. According to this conceptual and rhetorical orientation, Bitcoin is neither a hoax, nor a malignancy. It is merely limited, or immature. It is then to be re-conceived as a stepping-stone to greater things. Condescension does not originate on the left, but from

what might be called – with no small measure of reciprocal condescension – the *establishment right*. It is essentially conservative and pragmatic, perhaps even opportunistic. Defeat is refashioned into a take-over bid.[38] Condescension is the attitude towards Bitcoin characterizing the *Mainstreamer* camp, as described in the fourth chapter of this book.

§0.87 — Among the controversies intrinsic to Bitcoin, or *proper* to it, and thus exceeding the schema sketched above, none comes close to matching the importance of the 'block size debate'. In broaching this subject, it is crucial to note, from the beginning, that the nature of Bitcoin necessitates that any *debate* is essentially peripheralized. Bitcoin has its own proper dispute resolution procedure – it might be more accurately said that the protocol *is* a dispute resolution procedure – which works through decentralized consensus production and forks, not through dialectic and political reconciliation. Its relation to argument is one of techonomic *substitution*, rather than politico-philosophical *subordination*. In this regard, it epitomizes the *work-around*.[39]

§0.88 — In actuality, Bitcoin falls short of itself, inevitably. Its potential remains only very partially expressed. This is a criticism that only makes sense with reference to a teleological construction. What – *in the end* – is the purpose of Bitcoin? In selling itself, Bitcoin answers this question in a piecemeal way. It promises and – to some lesser but already non-negligible extent – actually delivers various services, primarily associated with monetary modernization on the cryptic mainstream of the deep industrial process. It defends capital from inflation-oriented political discretion, protects transactional anonymity, ensures contractual execution without reference to financial authorities, and refines currency to facilitate micropayment capabilities. It is, however, far more than any – or all – of this, because *decentralization has never been done this well*, at least within a social context. Bitcoin is thus nothing less than an escalation of multiplicity. Its potential necessarily escapes any conveniently-traced horizon.

§0.9 — It would be pointless to insult my readers with apologies for the stylistic convolution and choppiness. Substantive inadequacies might be considered still more insistent. This is a work that consistently strays far beyond its author's zone of cognitive competence. It will probably seem merely evasive to counter with a transcendental dismissal of the problem. The presumption that any author – or indeed any sapient primate – can confidently lay claim to a zone of cognitive competence is already peculiarly reckless, and in fact *prima facie* implausible. Intellectual capability is an imitation game.

§0.91 — Special areas of technical incompetence on exhibition in this work include history, macroeconomics, game theory, cryptography, computer science, mathematics, mathematical logic, and physics, among many others. Academic philosophy can no doubt be cruelly – if also plausibly – added to this list. *Any* statement here that appears as a claim to authority should be dismissed with a laugh. You can reach no pitch of trustlessness that overstates the case for

suspicion. “He *never* approaches a firm grasp on what he is talking about,” is a redundant – and now pre-empted – accusation. Don’t waste time establishing this (obvious) point. Rather, make the connections better, if you can. They will be made better soon enough, in any case. All the time Bitcoin – and the *thing* behind Bitcoin – was telling me what to write.

§0.92 — The word ‘Bitcoin’ is itself a terminological wager. It is used in this work in a number of senses, or concentrations. Qualifying these, instance-by-instance, is impractical. The function it bears most consistently in *Crypto-Current* is prospective. It corresponds to the question *what will Bitcoin become, and thus have been?* It refers, then, to those current and impending processes distinctively initiated by the 2008 Satoshi Nakamoto paper of that name. Bitcoin names a specific crypto-currency, but also more loosely and generally any distributed ledger governed by Nakamoto Consensus. It thus abbreviates *Nakamoto Consensus Governance*.

§0.93 — Political terminology is peculiarly resistant to coherent usage (for reasons touched upon in Chapter 4 of this book). In Crypto-Current, ‘liberal’ is used consistently in its European, rather than its American sense. (Philosophical consistency is otherwise impossible.) It designates *the cause of the autonomous economy*, and thus the politics of screening private transactions from public consideration. By celebrated world-historic irony, this approaches the opposite of its dominant contemporary – and especially American – sense. ‘Left’ and ‘right’ are taken to be defined, respectively, by opposition to, and practical advocacy for, maximally-permissive capitalistic activity. Variation on the ideological spectrum – or *principal political dimension* (PPD) as it is called here – is thus articulated in broadly Marxian fashion, between (classical) liberal and socialistic poles.

§0.94 — The attempt has been made to privilege logical over traditional syntax consistently (most pointedly in the placing of quotation marks). While initially set upon the course of a pitiless war of annihilation against semi-colons, those wheezing vermin that scratch out a wretched persistence among the unflushed sewers of punctuation, the noble enterprise has allowed itself to be side-tracked on occasions by the depravities of common usage.

§0.95 — Compressed date format (####/##/##) throughout this book is consistently: year / month / day, unless year only, or year / month only.

§0.95 — Since it would probably sound absurd to say that Satoshi Nakamoto has triggered the single greatest thing to happen on this planet since the origin of life, we will not say it (unless cryptically).

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[1] Dyson, George B., Darwin Among the Machines, p.159

[2] Deleuze, Gilles, and Guattari, Félix, *Capitalism and Schizophrenia Volume I: Anti-Oedipus.*

[3] *Heist* (2001), David Mamet.

[4] John 18:38

[5] Marc Andreessen interviewed by The Washington Post: http://www.washingtonpost.com/blogs/the-switch/wp/2014/05/21/marc-andreessen-in-20-years-well-talk-about-bitcoin-like-we-talk-about-the-internet-today/

[6]

[7] … https://www.theatlantic.com/technology/archive/2017/05/blockchain-of-command/528543/

[8] 'Bitcoin: A Peer-to-Peer Electronic Cash System' (2008)

https://bitcoin.org/bitcoin.pdf

[9] *Nullius in verba* is commonly translated as "On nobody's word" or "Take nobody's word for it". It formulates the principle of trustlessness at the origin of modern science. The motto dates back to the founding on the Royal Society, in November 1660. It is extracted from Horace's Epistle to Maecenas (his benefactor), in which he apologizes for abandoning lyric poetry for philosophy.

[10] *Crypto-Current* is not, by intention, a book about electricity, but it is quite probably a book about electricity nevertheless. Crypto-current (the thing) works itself out that way, in stubborn obscurity. Electronic publishing is no more than a late phase of its eventuality – although, essentially, among the most conspicuous. Electric current – measured in Ampères or 'amps' – conventionally takes the algebraic symbol 'I', derived from the French *intensité de courant* (current intensity), as used by Ampère in the formulation of his force law (1820). It is exactly *current intensity*, apprehended at a superior level of abstraction – and therefore without the benefit of any yet-stabilized, compact notation – that provides our topic. When posed in the Kantian fashion, our question – determined now at a scale that is bound to escape us – asks: *How can there be anything like current, in general?* It is, of course, *time* that is put into question here, but in such a way that electricity – and more specifically hyper-electrification – conducts the interrogation. Even within this widened domain, Ohm's Law (1827), I = V / R – current is equal to potential difference over resistance – provides a definition we will not, and actually *cannot*, find reason to depart from, unless in an abstract direction. Our task, rather, is to generalize it, without subsidence into metaphor. *Current* is not a figure for something else. It is the thing itself – or real time – even, or perhaps especially, when it is most artificial.

[11] The surviving Fragment 123 of Heraclitus (Φύσις κρύπτεσθαι φιλεῖ) hides much within its natural English translation, *Nature loves to hide*. A glance at the Greek is required because it is especially important for us to note that concealment is already *crypto*. In its invocation of a crypsis intrinsic to nature – an *integral obscurity* – the fragment captures a topic anterior to any dissociation of epistemology from ontology. It evokes an *active* or strategically self-directed dynamism of the unknown. Concealment is determined as a potency on the side of the 'object', or rather – far more precisely – the side of 'that' which eludes determination as objectivity, rather than merely a deficiency attributable to the subject. 'How do we know?' is far too confident a question. 'How does *it* escape knowledge?' interrupts the epistemological presumption. 'Ignorance' is thus construed positively, as a natural production.

[12] In Chinese language and conception, drawn from the practicalities of water clocks, 下 (xià) or *down* is the *direction of the future*, while 上 (shàng) or *up* is that of the past. Temporalization is descent. Water models time, to some degree of adequacy, while also hiding it. As already for the Greeks, and still for us, it *in some way* flows. If translated into the terms of occidental theology, *The Fall* never ended. Onwards is down, at least in abstract inclination.

[13] Morgen E. Peck writes: "… a bitcoin miner can … be confident that the other miners are not changing entries on the blockchain, because in Bitcoin there is no going backward." A re-installation of irreversibility is the primary achievement.

http://spectrum.ieee.org/computing/networks/the-future-of-the-web-looks-a-lot-like-bitcoin

[14] Among the nagging contexts of this book is the emergence over recent years of a neo-humanist philosophical school, constituting the dominant development of speculative realism. While specifically differentiated from earlier modes of humanist thinking by its consistent collectivism, it remains deeply conservative in its metaphysical commitment to the irreducibility of reflective human cognition to non-linear machine-process. In this regard, it affirms a species of philosophical writing understood as transcending *the algorithm in general*, as if – even after Gödel – we could presume to set such limits with confidence. It is a school that resonates with a specific neo-Kantian lineage, inflected terminologically through the work of Wilfrid Sellars, and the resuscitation of a 'space of reasons' irreducible to anything cognizable within the space of a supposedly strictly-bounded 'understanding' that is now carried techno-historically by comparatively informal engineering initiatives and disciplines. That which can be *justified*, it is asserted, cannot be dissolved into mechanical production, *in principle*. This claim is both bold, and traditional. By its very nature, it defies all prospect of determinable testing. Since any possible digital sequence is potentially the output of a program (and actually of an infinite number of programs), there cannot be any definite criterion of cognitive competence, when this is formulated in terms of a transcendent rationality. Testable performance is inescapably vulnerable to the prospect of mechanical emulation. Definite criteriology has, therefore, to be surreptitiously side-lined if the algorithm, in general, is to be subjected to philosophical delimitation. Whatever it might possibly be that no 'algorithm' could do, in principle, cannot – in principle – be clear. Critique is demarcation. It sets the limits of a topic (of pure reason, practical reason, and judgment, inaugurally). Crucially, these critical exercises are *immanent*, i.e. limited to realizable tribunals, or fields of judgment. They mark horizons. No Archimedean position is available to them. They do not ever in reality successfully project beyond themselves, to set the limits of something outside, in an attempt to ensure security against it. In other words, according to a proposal drawn directly from the philosophical tradition, *critique has no rigorously conceivable speculative employment*. Yet it is exactly some such speculative inflation that is required in order to assert the irreducibility of thinking to complex machine behavior. If this is the only way for philosophy to reproduce its effective cultural dignity, it can be confidently predicted that it will not long survive the techonomic intelligence explosion in which it is factually embedded. Transcendence over against the machine (in general) is the epitome of metaphysical presupposition. Neohumanism, then, is a consistent implicit theme here, as it will be far beyond the bounds of this discussion. It is engaged here, primarily, *via* a route-around – or an unbound evasion. The *bypass operation* is the critical current. What cannot be stopped also should not be.

[15] The techonomic horizon, for 'us', coincides with the impending crisis of historically-actualized artificial intelligence. Encapsulated within this by now manifest potential is the comprehensive automation of philosophy. It cannot be simply assumed, therefore, that professional philosophers will respond to the prospect with detached equanimity. The

simulation – and thus replacement – of their defining activity is integral to the hypothetical outcome under consideration. Under such circumstances, a coherent defensive reaction is the natural expectation. This is, of course, what we see. We will see much more of it. Yet there can be no stable hierarchy, preserving the superiority of philosophy over against a *Critical Automation Theory* (of the type advanced, for instance, by Luciana Parisi), or some less explicitly formalized analog. Automation is no more tractable to philosophical reflection, in principle, than philosophy is practically tractable to automation. The dominating considerations in both cases are synthetic, or experimental. A circuitous skepticism balances the technicization of understanding against the understanding of technicity, with both locked into a productive cycle. Learning fuses cybernetically with the machine. There is no Gordian Knot here for traditional authority to sever. Instead, there is a 'question' that cannot be confidently distinguished from an informal technical research program, and which therefore shrugs off non-ambivalent philosophical determination. An armchair philosophical objection carries no serious weight compared to something coming together in the garage.

[16] These will almost certainly seem to be inflated claims, even when attributed to sheer *efficient multiplicity*. That is why our credence is being effectively bypassed. Modernity has disconnected our doubts from any system of permissions. What cannot be believed is no longer preventable.

[17] Transcendental-empirical difference is very far from being an uncontroversial conceptual commitment. Within the Anglophone world, its most celebrated critic has been Willard Van Orman Quine, whose 'Two Dogmas of Empiricism' (1951) assaults the conceptual foundations of analyticity. Logical identity cannot find secure grounds in *definition*, Quine argues. The lexicographic features of any term are never simply given, but must always be produced. Language has no meta-level logical characteristics, capable of securing analytical judgments. Along these lines, an attempted re-absorption of the critical impulse into an expended empiricism has been the dominant Anglophone response to the transcendental blueprint for the modernization of philosophy. Such an approach coordinates well with the techno-empiricism of the computer age, in which *programs are processed as data*. Between codes and information, protocols and applications, there can be no *logically secure* hierarchy, once Turing-complete digital computation is at work. Yet, from the partial perspective of the crypto-current, it is obligatory nevertheless to dissent. The resilient value of the analytic-synthetic distinction lies in its emphatic *asymmetry*. That is 'analytic' which can be conveniently *checked*, while the 'synthetic' has to be laboriously *discovered*. Cryptography essentially coincides with this distinction. We are thus, in passing, compelled to dismiss Kant's identification of synthesis with simple addition ("7 + 5 = 12") as misconceived, and misleading. It makes no sense to discuss the analytic, or synthetic, except in regard to *reciprocal asymmetric operations*, exemplified by trap-door functions. In the most significant instance, the analytic-synthetic divide runs *between* arithmetical production and factorization. The rigorous content of the distinction is *work*, in the sense given

to this term by computer science. Its entire domain is exhausted by twin procedures of asymmetric facility. In its scientific application, it divides theoretical construction from experimental replication (or, once again, *discovery* from *checking*). Nature only has definite *secrets* in respect to this split method. If 'thinking' – or experimental discovery – were as economical as testing, or attempted result replication, there could be nothing like science at all.

[18] For the purposes of its employment here, 'ontological difference' (between Being and beings) is considered to be no more than a restatement of transcendental-empirical difference, of negligible philosophical originality. It is not adopted as a marker of penetrating inquiry, therefore – still less of Heidegger scholarship – but solely as a resource valued for its pedagogical practicality. The term is validated for this purpose precisely insofar as the structural integrity of critique is economically conserved by it. *Being is not a being*. In this formula, the basic transcendental insight is captured with what is probably unsurpassable economy.

[19] Critique is anti-Archimedean philosophy, and in this strict sense an intrinsic anti-rationalism. It is directed against the pretensions to super-ordinate theoretical leverage which define *metaphysics*. Every claim to *exception from immanence* falls prey to it. Its sole empirically exorbitant proposition is that *the whole permits no oversight*. No 'view from above' can be true. Critique thus supplies the schema for that *flat epistemology* which empiricism requires and fails, itself, to produce. Its historical mission is to make the world safe for empiricism (i.e. techno-science). It can therefore be understood as modernity's watchdog. Liberal civilization knows no higher principle of security. Its enemies are 'churches' with global ambitions, which is to say universalizing abstract-ecclesiastical authorities. … When all relevant terms are stripped of encrustation with maximum rigor, critique is accurately characterized as *anarchism in philosophy*. It is that, alone, which cannot know any higher law. Whatever tries to transcend it can only repeat it, or less. We call this *time*, which can never be anticipated or out-lasted. Above Temporalization there is nothing. To engage in critique is to think in the name of time. …

[20] The word 'paper' slides easily into the digression queue. After all, it might be convincingly argued that reference to the 'Bitcoin paper' has already surrendered to a linguistic legacy of peculiar inappropriateness, and thus to laughable anachronism. 'Paperlessness' is a retrofutural and thus historically ironized idealization of the electronic landscape. It is either pseudo-teleology or – far more probably – premature forecast, tacitly engaged by this and any other discussion of digital information, even prior to a collision with the thematic juggernaut of 'paper' money. If 'papers' are still with us – even when they have only ever been incidentally propagated in a 'dead tree' medium – it is because history is a loose sheaf, rather than a neat stack. Since technological epochs co-exist, simultaneously, anachronism finds its avenues in space, even more than in time.

[21] The distinction between “lowercase bitcoin and Initial-Cap Bitcoin” (in the words of Terrence Yang), i.e. “digital money” and “a protocol” respectively, has already been impressively standardized. The emulation of a philosophical difference – and, as moderns, we can confidently say *the* philosophical difference – by a terminological convention rapidly settled within the worlds of technological commentary and financial news media attests to a determination of conceptuality from the outside. The ‘thought’ that matters is produced in advance of any explicitly philosophical apprehension. (This fatality will no doubt evoke Hegel’s “Owl of Minerva” among those receptive to speculative communization, whose problems will be touched upon later in this book.) For Terrence Yang’s articulation of Bitcoin’s ontological difference, see:

http://www.quora.com/What-is-bitcoin-and-its-significance-in-physical-world/answer/Terrence-Yang-4?srid=3W9X

[22] Eminent wave theorist Carlota Perez insists upon the historical integrity of technology and finance within ‘great surges of development’, each of which introduces a new ‘techno-economic paradigm’. She first divides each surge into an ‘installation phase’ and a ‘deployment phase’ (each in turn is tractable to binary sub-division), noting that the transition from one to the other is typically marked by an investment-overshoot driven financial crisis. Political economy is a rhythm. Its pulse, with roughly half-century periodicity, encompasses not only techno-industrial innovation and its financing, but also social sentiment and political animation. The history of capitalism is thus constructed as a *succession* of comparatively discrete stages. Each of Perez’s ‘great surges of development’ corresponds to a complex telic object. The language of ‘installation’ already says as much. Some virtual thing *arrives*, or is put into place. (These terminologies are strictly inter-changeable.) On the basis of the most mechanical reading of Perez’s supple analytical framework, something corresponding to a Bitcoin ‘deployment phase’ might be expected in the 2030-2040s. Such a time-table assumes an *absence* of techonomic acceleration at the deepest level of the modernization: a negative prediction which Perez’s historical analysis as a whole supports. The Great Waves of development are paced by an anthropomorphic-generational temporality, rather than a self-propelling momentum inherent to mechanical industrialism. They are not speeding up. Comparatively stable periodicity is essential to the hypothesis. *Crypto-Current* is *not* a documentation of the Bitcoin installation process, although it grants – without reservation – the potential value of such a work. There is perhaps nothing that would more incisively capture the deepest principles of the rising capitalist wave. Functional trustlessness, as an industrial output, remains only very tentatively conceived. The momentum behind it is difficult to easily overestimate. With the emergence of Bitcoin, rigorously constitutional governance, a political-economic problem that the old liberal order found impossible to successfully navigate, has transitioned into a techonomic capability under automatic propulsion. Industrialization of government is the definite implication. Quite clearly,

the socio-political stake in a capitalist development wave can never have been higher. Regimes, potentially, are now business outputs.

[23] A larva is a mask, and a cryptic (infolded) potentiality.

[24] Duplicity is not merely error, but the *malicious instigation of error*. Once again, cryptography schools philosophy in realism here. 'Confusion' is, in this case, primarily *enemy action*. An effective response therefore exceeds epistemology, or cognitive self-correction. Doubling spending is more than a mistake. The requirement is not only for intellectual adjustment, but for a procedure that automatically secures resilient singularity, against *attack*. Knowledge is situated on a battlefield. It is this that constitutes Bitcoin's principal achievement.

[25] "I think this is a reference to Bishop in *Aliens*," suggested the anonymous 'ClarkHat' ingeniously, when this proposition was initially floated on Twitter. (Such entirely supplementary semiotic production exemplifies the surplus value of code.)

[26] Given sufficient – i.e. radical – critical correction of classical conceptions, the *network* is an Idea in the strong (Platonic) sense and, still more definitely, an Aristotelian causally-efficient End (*telos*). It allows for judgments of adequate *approximation* and *actualization*, respectively. Subtraction of super-ordinate instances – i.e. metaphysical impositions – is the criterion, in either case. Through elimination of privileged or commanding nodes, a network is unambiguously improved, relative to its model. It is no less unambiguously *enhanced* relative to its intrinsic finality. Flatness is the *ideal*, and the *goal*. This is not, of course, to be confused with any psychological conception of purpose, or adequation. It is 'merely' the directive influence of equilibrium, or – to invoke a more recent coinage – 'attractor states' upon the partially-coherent evolution of a system. There are better (or worse) networks, independent of any reference to subjective judgment. In consequence, there is a real gradient to modern history. Only at the most superficial level of evaluation is Bitcoin a popularity contest. The conflict it survives is far more serious.

[27] Deleuze & Guattari thematize this topic as *the surplus value of code*, as illustrated by the sexual instruction capture, or hacking, of the wasp by the orchid. The sign, duplicity, and resource acquisition are compactly integrated within the very widespread phenomenon of mimicry.

[28] That the term "occult liberal tradition" conservatively re-phrases *crypto-current* is not meant as a secret here. Between liberalization in reality (rather than declaration) and the practical history of cryptography, there is no difference. As the Ancien Régime already knew, Illuminism provides the dramatic mask.

[29] That the commercial process is, from the start, artificial intelligence production is a long-standing suspicion within the Austrian economic tradition. For a recent example, from Hunter Hastings, see: https://mises.org/library/entrepreneurial-super-intelligence-praxeology-age-ai

[30] It will entertain future historians that science fiction money was so often denominated in *credits*. … Financialization makes money, fundamentally, a *ledger entry*, with physical cash tokens marginalized as anomalous relics. To use money is to access an account. … As a digital emulation of gold, instantiated upon a public ledger, Bitcoin insolubly fuses primitive and futuristic elements. It exemplifies an alternative financialization, hostile to institutional discretion. There is not retreat from the identification of money with its registration upon a ledger, but rather a radicalization. Yet at the same time its characterization as *credit* (i.e. *bank money*) is brought into extreme practical question. The distinction amounts primarily to the subtraction of discretion, which eliminates fractional reserve money creation.

The modern *bank account* is not only a (comparatively complex) ledger entry, but also a permission to borrow, defined by a credit limit. Bitcoin, in contrast, restores money to a *positive asset*, without counter-party obligation, economically equivalent to abstract precious metal.

[31] Perhaps Francis Bacon never proposed that nature be "hounded in her wanderings and put on the rack and tortured for her secrets." Regardless, the culturally long-sustained plausibility of this quote is itself suggestive. Secrecy, and not mere ignorance, was the topic. The object of systematic knowledge was recognized as positively elusive. Modernity in science germinated in realistic soil.

[32] The historical precursor to the cryptographic key is the *seal*. Between the two, the functional analogy is striking, but a seal falls short of a crypto-key due to its dependence upon transcendent authorization. Seals distribute *permissions*, not capabilities. A seal does not protect itself. It presupposes an extraneous apparatus of authority and enforcement. In this respect, the comparison to the pre-cryptographic history of property rights and protections is only strengthened. What crypto-protection affords, sealing the first true property, is *immanent security*. The demand for cooperation is relieved.

[33] There are two basic types of teleological metaphysics. Both involve an untenable objectification. In the classical case, exemplified by Aristotle, it is the *goal* of a process that provides its intelligible object. In modern variants of teleological thinking, metaphysical objectification more commonly invests a *purposive substance*, or essence (an 'entelechy'). Critique dismantles both. It strips teleology down to raw singularities. There are no general goals, or generic purposive forces. The sheer *thing* that is becoming is not an instance of anything other than itself. The event coincides exactly with its causality. Its power is its sole identity.

[34] This claim will strike many as *completely wrong*. For instance, it might be asked: Are not complex eventuations the precise opposite of teleological processes? Yet, if they seem so, it is only because teleology has been drastically misconceived. Teleo-process, sketched epistemologically, is *nothing at all more than* that which increases in intelligibility with reverse time-signature. It lends itself to modeling as a convergent wave. In other words, it is characterized by comparatively obscure – diffuse or loosely-connected and highly heterogeneous – precursor states. Every complex emergence exhibits such a pedigree, and production pattern. The *mechanistic* sciences – understood in the programmatically anti-teleological sense – are incessantly scandalized by such things, and will continue to be. Reciprocally, the concept of 'emergence' cannot – by the same necessity – be expected to achieve full scientific respectability, short of a theoretical and historical re-ordering of time. It can be *confidently predicted*, in short, that crypto-teleological agitations will continue to recur, that the natural sciences will not find them to be suppressible, and that they will each time, and essentially, be aligned with dissent against modern intellectual orthodoxy. There is no crypto-teleological 'paradigm' that could be recognized, and then comfortably installed. After all, the inadequacy of the actual *is* the phenomenon. What counts as *currently-demonstrated* depends on the *time-frame*. The scale of 'now' is problematic, so every 'yet' also is. What, or how much, has happened yet? Even without a causal framework oriented by the privileging of precursor states (or 'efficiency'), this problem would remain irreducible. A mechanistic perspective attentive to teleo-process would already be something else. Furthermore, it would be something that could grasp itself. Mechanization as the supreme teleo-process is the final cosmic irony.

[35] *Only three, why not five?* Our list does not describe a full process of grieving for the fiat currency order, but restricts itself to partial articulation of the Bitcoin controversy. It nevertheless unmistakably truncates the celebrated (and much-parodied) 'five stages of grief' outlined by Elisabeth Kübler Ross. Denial, Anger, and Bargaining take us from derisive laughter, through heated ideological opposition, into mainstreaming schemes, even if it would be over-hasty to assume these responses were tidily organized as sequential *phases*. Depression and – finally – Acceptance begin on the far-side of all argument, with the updated presumption that Bitcoin has unambiguously won. *Crypto-Current* returns from Acceptance, but (in accordance with its nature) it hides the details.

[36] This is exemplified by the 'Streisand Effect'.

[37] Hype-cycles are serious things. Every emerging technology of profound consequence is, during the early-phase of its introduction, *over-sold*. Such promotional extravagance is thus an indicator of considerable ambivalence. It predicts – simultaneously – a short-term correction, medium-term resilience, and long-term take-off. If this is the sense in which Bitcoin is being *hyped*, it will eventually be huge, beyond even anything the hype-phase anticipates.

[38] By analogy to a successful business competitor greeted by the words: “Okay, you’ve proved that you’re good enough to work for me.”

[39] The greatest anti-capitalist joke known to history runs: *Capital interprets morality as damage and routes around it*. The rightly-celebrated maxim which this witticism plays off is discussed directly in Chapter 4.

15 Comments

Write a comment...

Walker Goff Sep 1, 2022

If this is really you, and you have the time and the interest, please hit me up at walker.goff.wg@gmail.com or warren.goff@duke.edu to schedule an interview. I am obsessed with your work (not just the early work), and I would love to pick your brain. I can compensate you for your time. I applied for a research grant on blockchain and I may get it, but even if not I can pay you for the interview. Just let me know. I'd love to talk. My research interests are primarily blockchain now, and philosophy / critical theory insofar as it provides different frameworks for discussing it and other AI-like systems. And no, I'm not gonna ask you any stupid questions about politics. I have a near-zero interest in politics. So I'm not gonna be like, "how can we use accelerationism to stop human suffering from this evil capitalist machine?" or other missed-the-entire-point questions. People who ask that haven't even read Marx (maybe they touched the Manifesto, but never Capital), let alone read your work closely enough. Anyway, if you're not interested, no worries. If you are, hit me up and we'll go over details (payment, discord vs telegram vs whatever, all of that). Cheers.

♡ 2 Reply Collapse

LudovicdeMarsillac Oct 29, 2021

The unconscious function of language, as subsequently in the case of writing, is to cause the forgetting of what came epistemically and epistemologically before--perhaps. Before voiced language, similarly to certain other socialized higher animals, there was likely another kind of language based on a more directly and irrepressibly inter-cognitive connection, whose ambit of circularity was the small tribe forming a sort of rosary of interralated equally small complementary tribal units. Any interchange was limited to this very circumscribed tribal constellation of cousinship. It was a certain kind of Eden, in the sense that lying was either unthinkable or psychologically unsustainable for any significant length of time (measured in days). The development of the sort of voiced language with which we are presently familiar is coincident with the development of a sort of refractive ego, proceeding from the intrinsic ambiguity inevitably encoded in linguistic representation, from which latently emerges lying proper following an either delayed or precipitous process of forgetting/oblation of the capacity of activation the otherwise innately human capacity for direct inter-cognitive communication. It is the ultimately

unconscious repression of this latter originary, what one might call Edenic, capacity for instinctual communicational transparency that makes lying sustainable and, indeed, a fundamental aspect of human society ever since. And it is before or in the face of this inter-cognitively repressive symbolic system that only religion, that esoteric murmur of Edenic transparency, stood as a ritualized thorn in the mind.

♡ 2 Reply Collapse

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